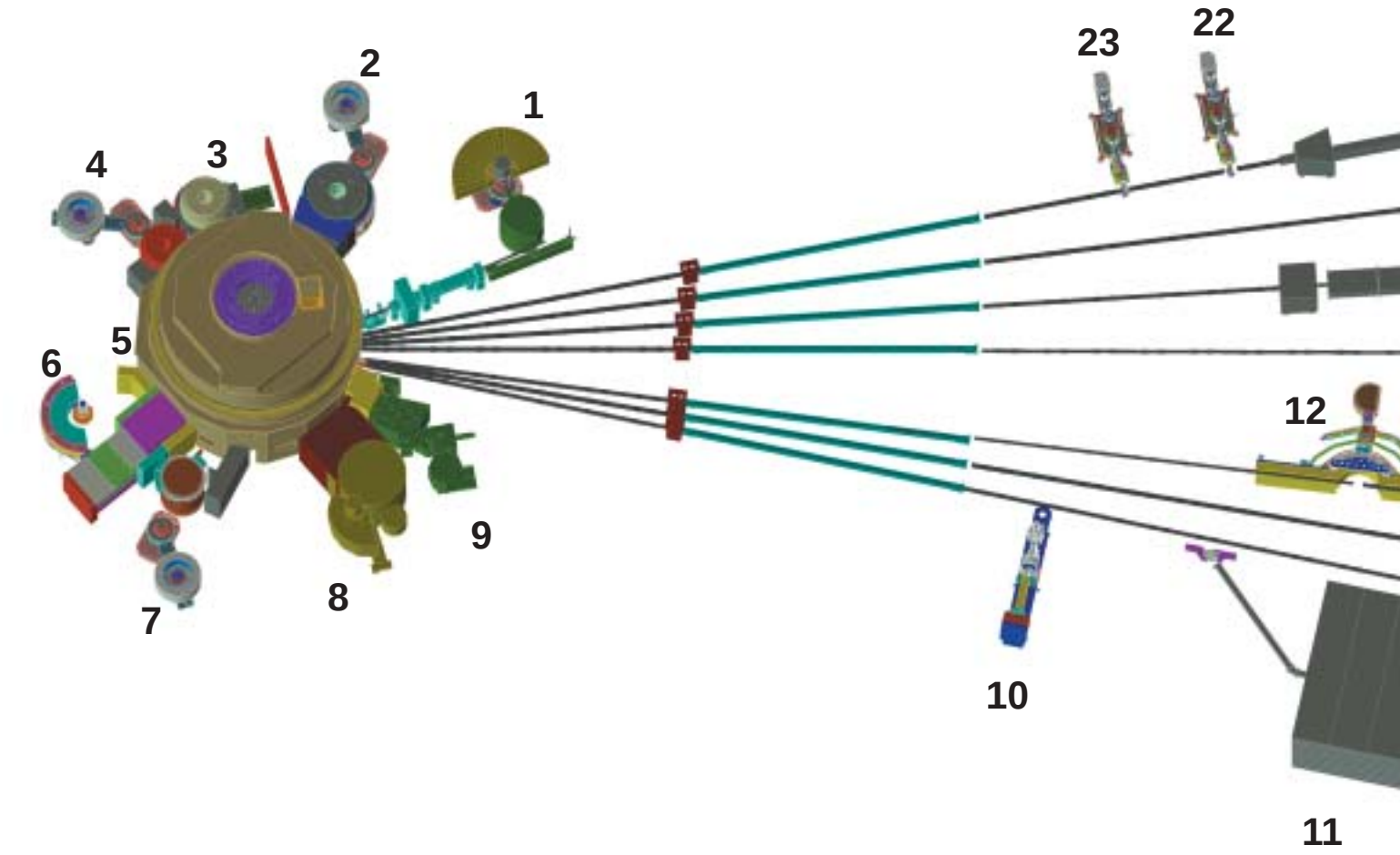
NIST Center for Neutron Research Layout



1 A Cold Neutron Depth Profiling instrument (not shown) for quantitative profiling of subsurface impurities currently at this site will be moved to another position. Shown is a proposed Triple Axis Cold Neutron Crystal Spectrometer with double focusing monochromator and multiple crystal analyzer/ detectors that can be flexibly configured for several energies simultaneously or for high throughput at one energy.

2 BT-7 Triple Axis Spectrometer with fixed incident energy for measurements of excitations and structure.

3 BT-8 Residual Stress Diffractometer optimized for depth profiling of residual stress in large components.

4 BT-9 Triple Axis Crystal Spectrometer for measurements of excitations and structure.

5 Thermal Column A very well-thermalized beam of neutrons used for radiography, tomography, dosimetry and other experiments.

6 BT-1 Powder Diffractometer with 32 detectors; incident wavelengths of 0.208 nm, 0.154 nm, and 0.159 nm, with highest resolution of $\delta d/d = 8 \times 10^{-4}$.

7 BT-2 Triple Axis Crystal Spectrometer with polarized beam capability for measurement of magnetic dynamics and structure.

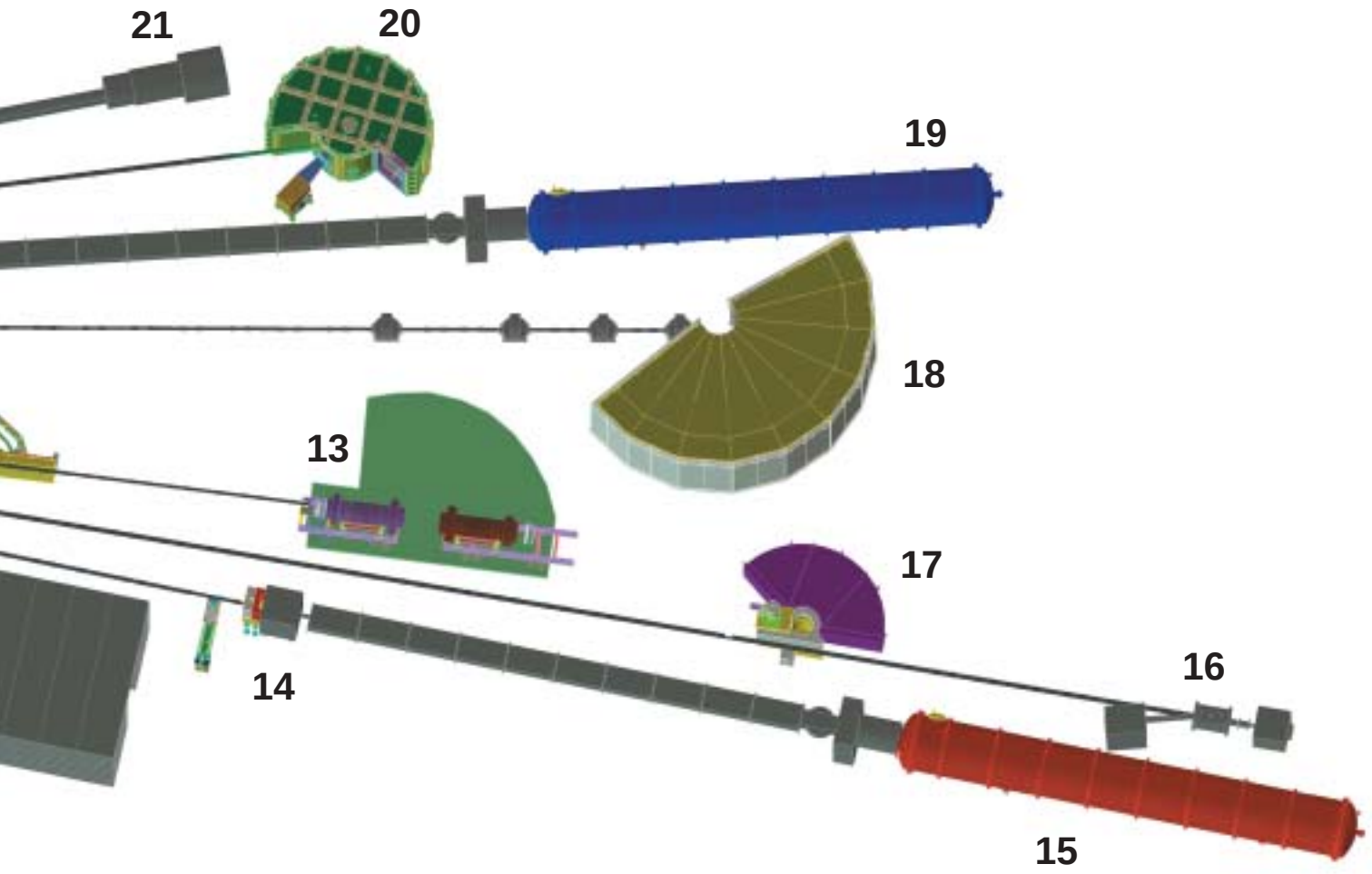
8 BT-4 Filter Analyzer Neutron Spectrometer with cooled Be/ Graphite filter analyzer for chemical spectroscopy.

9 BT-5 Perfect Crystal Diffractometer SANS small angle neutron scattering instrument for microstructure on the 10^4 nm length scale, sponsored by the National Science Foundation and NIST, part of the Center for High Resolution Neutron Scattering (CHRNS).

10 NG-7 Horizontal Sample Reflectometer allows reflectivity measurements of free surfaces, liquid vapor interfaces, as well as polymer coatings.

11 Neutron Interferometry and Optics Station with perfect silicon interferometer; vibration isolation system provides exceptional phase stability and fringe visibility.

12 Spin Polarized Triple Axis Spectrometer (SPINS) using cold neutrons with position sensitive detector capability for high resolution studies — part of CHRNS.



13 **Spin Echo Spectrometer** offering neV energy resolution, based upon Jülich design, sponsored by NIST, Jülich and ExxonMobil — part of CHRNS.

14 **Prompt Gamma Activation Analysis** cold neutron fluxes allow detection limit for H of 1 μg to 10 μg. Focused beams are available for profiling.

15 **NG-7 30 m SANS** for microstructure measurements sponsored by NIST, ExxonMobil, and the University of Minnesota.

16 **Neutron Physics Station** a cold neutron beam 150 mm x 60 mm, available for fundamental neutron physics experiments.

17 **Fermi Chopper TOF Spectrometer** a hybrid time-of-flight spectrometer for inelastic scattering with incident wavelengths between 0.23 nm and 0.61 nm chosen by focusing pyrolytic graphite crystals. A simple Fermi chopper pulses the beam.

18 **Disk Chopper TOF Spectrometer** versatile time-of-flight spectrometer, with beam pulsing and monochromatization effected by 7 disk choppers. Used for studies of dynamics in condensed matter, including macromolecular systems — part of CHRNS.

19 **NG-3 30 m SANS** for microstructure measurements sponsored by the National Science Foundation and NIST — part of CHRNS.

20 **Backscattering Spectrometer:** high intensity inelastic scattering instrument with energy resolution < 1 μeV, for studies of motion in molecular and biological systems — part of CHRNS.

21 **8 m SANS** for polymer characterization, sponsored by NIST Polymers Division.

22 **Vertical Sample Reflectometer** instrument with polarization analysis capability for measuring reflectivities down to 10^{-8} to determine subsurface structure.

23 **Vertical Sample Reflectometer** instrument with polarization analysis capability for measuring reflectivities down to 10^{-8}, optimized for biological applications. It will have a position-sensitive detector for measuring off-specular reflections.